REMARKS

Applicant would like to thank the Examiner for extending the courtesy of a telephone interview on December 15, 2005. The parties to the interview consisted of Matthew T. Henning, the Examiner responsible for the examination of the present patent application, and Manisha Chakrabarti (Registration No. 41,665), attorney for the Applicant. The interview focused on amendments to independent claims 1, 21, and 23 to distinguish over the teachings of De Maine et al. (U.S. Patent No. 3,656,178). Amendments to independent claims 1, 21, and 23 and arguments in support of such amendments are presented below and reflect discussions with the Examiner.

Claims 1-3, 5-10 and 21-61 stand rejected in the present application. Claims 1, 21, 23, 34, and 48 have been amended and claims 2 and 24 have been cancelled without prejudice by way of this amendment. Claims 1, 3, 5-10, 21-23, and 25-61 are currently pending and at issue in the present application.

The specification has been objected to as failing to provide antecedent basis for the claims 34 and 48. Claims 34 and 48 have been rejected under 35 U.S.C. §112, first paragraph, as failing to comply with the written description requirement.

Claims 34 and 48 have been amended to comply with the written description requirement. Support for amended claims 34 and 48 can be found on page 18 lines 17-18 of the specification. More specifically, the specification states "Alternatively, the control code can be generated in a random or non-random fashion through the use of the control code index." Accordingly the rejection of claims 34 and 48 as failing to comply with the written description should be withdrawn.

Claims 1, 3, 5-10 and 47-61 have been rejected under 35 U.S.C. 101 as being directed to non-statutory subject matter. More specifically, the claims at issue have been rejected as being directed towards a non-statutory process of manipulating data.

Applicant respectfully traverses the rejection of independent claim 1 and claims 3, 5-10, and 47-61 dependent thereon as being directed to non-statutory subject matter.

The Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility Section IV.C states:

> While abstract ideas, natural phenomena, and laws of nature are not eligible for patenting, methods and products employing abstract ideas, natural phenomena, and laws of nature to perform a real-world function may well be. In evaluating whether a claims meets the requirements of section 101, the claim must be considered as a whole to determine whether it is for a particular application of an abstract idea, natural phenomena, or law of nature itself.

The focus of the inquiry is whether the claim, considered as a whole, constitutes "a practical application of an abstract idea." *State Street Bank & Trust Co. v. Signature Financial Group, Inc.*, 149 F.3d 1368, 1373, 47 USPQ2d 1596, 1600 (Fed. Cir.1998). A process claim that applies a mathematical algorithm to "product a useful, concrete, tangible result without pre-empting other uses of the mathematical principle, on its face comfortably falls within the scope of § 101," *AT&T Corp. v. Excel Communications, Inc.*, 172 F.3d 1352, 1358, 50 USPQ2d 1447, 1452 (Fed. Cir. 1999).

The Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility Section IV.C further states:

> In determining whether the claim is for a "practical application," the focus in not on whether the steps taken to achieve a particular result are useful, tangible and concrete, but rather that the final result achieved by the claimed invention is "useful, tangible and concrete."

Claims 1, 3, 5-10 and 47-61 recite a method for encrypting an input data string that generates an encrypted version of the input data string, i.e. the final result achieved by the claimed invention is an encrypted version of the input data string.

While the claims at issue recite steps involving the manipulation of data, the manipulation of the input data string constitutes a "practical application of an abstract idea" to produce the "useful, concrete, tangible result" of an encrypted version of the input data string.

Referring to page 1, lines 17-24 of the specification, support is provided for the position that encrypting an input data string to produce an encrypted version of the input data string does indeed produce a "useful, concrete, tangible result."

> The proliferation of computers has resulted in an increased usage of digital data in the transmission, storage, and use of text, graphics, sound and video. As the use of digital data increases, the need to secure and protect this data also increases. One common method of protecting digital information is through the use of encryption. Encryption generally refers to the reversible transformation of data into a form in which the context of the original data cannot be ascertained by normal examination of the data.

Furthermore, Applicant does not seek patent protection of the mathematical algorithm involving the manipulation of data, but to a practical application of the mathematical algorithm. The claimed invention manipulates an input data string data to produce an encrypted version of the input data string.

Since claims 1, 3, 5-10 and 47-61, considered a whole, constitutes a "practical application" of the manipulation of data to achieve a final result, a "useful, concrete, tangible result," of an encrypted version of the input data string, without pre-empting other uses of the mathematical algorithm recited in the claims, the rejection of such claims as being directed to non-statutory subject matter should be withdrawn.

Independent claim 1 and claims 3, 5, 8-10, 47-55 and 59-61 dependent thereon; independent claims 21 and claim 22 dependent thereon, as well as independent claim 23 and claims 25-26, 29-33, 34-40 and 44-46 dependent thereon stand rejected as being unpatentable over De Maine et al. (U.S. Patent No. 3,656.178).

Amended independent claims 1, 22, and 23 recite methods and a computer usable medium storing a computer program for encrypting an input data string. An input data string is received for encryption. A static control code index is defined prior to receiving the input data string for encryption. The control code index includes a plurality of control codes where the values of the plurality of control codes themselves are independent of input data string specific characteristics. (See specification, page 7, lines 13-22 and page 17, line 19 through page 18, line 1.) An order in which to query the presence of each of 2^n different configurations of n bits within an input data string is determined and a control code associated with the determined order is determined using the control code index. A position code is generated by identifying positions of each of the 2^n different configurations of n bits in the input data string in accordance with the determined order. The control code and the position code are combined to form an encrypted data string.

The De Maine et al. patent discloses four compression techniques (i) Slow Mode Type 1 compression, (ii) Slow Mode Type 2 compression, (iii) Fast Mode Type 1 compression, and (iv) Fast Mode Type 2 compression.

Turning first to the Slow Mode Type 1 compression and the Slow Mode Type 2 compression, both techniques begin with an initial analysis of the input data string. The input data string is scanned on a byte by byte basis. A LEXICON table is provided with 256 byte positions where each byte position corresponds to one of the 256 different 8 bit

configurations possible for a single byte of data. The LEXICON table is used to count the number of times that each of the different byte configurations appear in the scanned input data string. Those byte configurations that do not appear in the scanned input data string are designated as Type 1 codes and those byte configurations that are identified as appearing more than a certain number of times in the scanned input data string are designated as Type 2 codes.

The Slow Mode Type 1 compression is performed first by analyzing the input data string for the presence of redundant multi-byte patterns. The identified redundant multi-byte patterns are deleted from the input data string and replaced with a Type 1 code that was identified during the initial analysis of the input data string. Each deleted multi-byte pattern and the associated replacement Type 1 code are inserted at the beginning of the compressed data string. The Slow Type 1 compression is repeated until either all of the identified Type 1 codes have been utilized or until the process fails to achieve further compression.

The Slow Mode Type 2 compression is performed next on the output of the Slow Mode Type 1 compression and examines consecutive 256 byte string segments for the presence of each of the Type 2 codes identified during the initial analysis of the input data string. If a particular Type 2 code is found to appear multiple times in a string segment, a 256 bit map (32 bytes long) is generated identifying the specific locations of that Type 2 code within the 256 byte string segment. The redundant Type 2 code is deleted from the string segment and the string compressed to eliminate the spaces vacated by the deleted Type 2 code. The deleted Type 2 code and the 256 bit map are added to the compressed string segment.

Both the Slow Mode Type 1 and the Slow Mode Type 2 compression techniques involve an analysis of specific characteristics of the input data string to generate Type 1 codes and Type 2 codes. More specifically, those byte configurations that are identified as not appearing in the input data string are designated Type 1 codes and those byte configurations that are identified as appearing more than a certain number of times within the input data string are designated as Type 2 codes.

In contrast, the values of the control codes in the control code index, as recited by the claims at issue, are independent of input data string specific characteristics. Furthermore, unlike the teachings of De Maine et al., where the LEXICON table defining the Type 1 codes and the Type 2 codes are generated on the fly as a component of the process, the control codes in the control code index are defined prior to even receiving the input data string for encryption.

Turning now to the Fast Mode Type 1 and the Fast Mode Type 2 compression techniques, both of these compression techniques involve the creation and use of a PCORDS table. The PCORDS table is a dynamic table that is created based on the historical analysis of the characteristics of previously compressed input data strings and is updated continuously based on the input data string characteristics of every new input data string received for compression.

A first section of the dynamic PCORDS table, used in Fast Mode Type 1 compression, contains a listing of multi-byte patterns that are likely to occur in similar types of input data strings and a savings ratio associated with each multi-byte pattern to indicate the degree of compression achieved by the use of that multi-byte pattern. During Fast Mode of Type 1 compression, the received input data string is analyzed for the

presence of each of the multi-byte patterns identified in the PCORDS table and the PCORDS table is dynamically updated to reflect the likelihood that the multi-byte patterns actually identified as being present in the received input data string are likely to occur in future input data strings.

A second section of the PCORDS table, used in Fast Mode Type 2 compression, contains a listing of Type 2 codes that are likely to occur in similar types of input data strings. During Fast Mode Type 2 compression, each string segment is analyzed for the presence of each of the Type 2 codes identified in the PCORDS table and the PCORDS table is dynamically updated to reflect the likelihood that the Type 2 codes actually identified as being present in the received input data string are likely to occur in future input data strings.

While the De Maine et al. discloses a dynamic PCORDS table, containing multi-byte patterns for use in Type 1 compression and Type 2 codes where both the multi-byte patterns and the Type 2 codes are continuously updated based on the characteristics of each input data string received for processing, the control code index, as recited by the claims at issue, is a static control code index where the values of the control codes in the control code index are defined prior to even receiving an input data string. Furthermore, the values of the control codes in the control code index are independent of input data string specific characteristics.

Since De Maine et al. does not disclose each of the elements recited by independent claim 1 and claims 3, 5, 8-10, 47-55 and 59-61 dependent thereon; independent claims 21 and claim 22 dependent thereon, as well as independent claim 23 and claims 25-26, 29-33, 34-40 and 44-46 dependent thereon, Applicant respectfully

requests that the rejection of all such claims as being unpatentable over De Maine et al. be withdrawn.

Claims 6, 7, 27, and 28 stand rejected as unpatentable under 35 U.S.C. §103(a) as being unpatentable over De Maine et al. in view of Shimizu et al (U.S. Patent No. 6,772,343).

Claims 6-7 depend from independent claim 1 and therefore include the elements recited in independent claim 1 and claims 27-28 depend from independent claim 23 and therefore include the elements recited in independent claim 23. Applicant respectfully submits that the above-stated deficiencies of the disclosure of De Maine et al. are not cured by the disclosure of Shimizu et al. Shimizu et al. generally discloses a method and system for segmenting an input text string into a plurality of smaller blocks of data, dividing the segmented blocks of data into groups and encrypting the divided blocks of data using keys. A random number generator may be used to generate random numbers based on a seed retrieved from a seed storage device. The generated random number defines random block lengths for the segmented blocks.

Shimizu et al. does not disclose or suggest providing a static control code index that is defined prior to receiving an input data string for encryption where the control code index includes a plurality of control codes where the values of the plurality of control codes are independent of input data string specific characteristics as recited by the claims at issue. Accordingly, the rejection of claims 6, 7, 27, and 28 as being unpatentable over De Maine et al. in view of Shimizu et al. should be withdrawn.

Claims 41, 42, 56 and 57 stand rejected under 35 U.S.C. §103(a) as being unpatentable over De Maine et al. in view of Weiss (U.S. Patent No. 5,479,512).

Claims 56 and 57 depend from independent claim 1 and therefore include the elements recited in independent claim 1. Claims 41 and 42 depend from independent claim 23 and therefore include the elements recited in independent 23. Applicant respectfully submits that the above-stated deficiencies of the disclosure of De Maine et al. with respect to independent claims 1 and 23 are not cured by Weiss.

Weiss generally discloses a method and system for using an exclusive OR function to encrypt compressed data. Weiss does not disclose or suggest providing a static control code index that is defined prior to receiving an input data string for encryption where the control code index includes a plurality of control codes where the values of the plurality of control codes are independent of input data string specific characteristics as recited by the claims at issue. Accordingly, the rejection of claims 41, 42, 56 and 57 as being unpatentable over the combination of De Maine et al. in view of Weiss should be withdrawn.

Claims 41, 43, 56, and 58 stand rejected under 35 U.S.C. §103(a) as being unpatentable over De Maine et al. in view of Butler (U.S. Patent No. 5,861,887).

Claims 56 and 58 depend from independent claim 1 and therefore include the elements recited in independent claim 1. Claims 41 and 43 depend from independent claim 23 and therefore include the elements recited in independent claim 23. Applicant respectfully submits that the above-stated deficiencies of the disclosure of De Maine et al. with respect to independent claims 1 and 23 are not cured by the disclosure of Butler et al.

Butler et al. generally discloses a method and system for iteratively reducing an image until the reduced image meets predefined size and resolution characteristics.

Butler et al. does not disclose or suggest providing a static control code index that is defined prior to receiving an input data string for encryption where the control code index includes a plurality of control codes where the values of the plurality of control codes are independent of input data string specific characteristics as recited by the claims at issue. Accordingly, the rejection of claims 41, 43, 56, and 58 as being unpatentable over De Maine et al. in view of Butler et al. should be withdrawn.

Since De Maine et al. standing alone does not disclose, and Shimizu et al., Weiss or Butler in combination with De Maine et al. fail to disclose or even suggest the use of a static control code index that is defined prior to receiving an input data string for encryption where the control code index includes a plurality of control codes where the values of the plurality of control codes are independent of input data string specific characteristics as recited by the claims at issue, Applicant respectfully requests that the rejection of claims 1, 3, 5-10 and 21, 22, 23, 25-61 be withdrawn.

Since the prior art does not disclose each of the elements recited by the claims at issue, it follows that such claims are not anticipated thereby.

Furthermore, none of the prior art discloses or suggests that it would be desirable or even possible to use an encryption method and system that employs a static control code index that is defined prior to receiving an input data string for encryption where the control code index includes a plurality of control codes where the values of the plurality of control codes are independent of input data string specific characteristics as recited by the claims at issue. It is therefore evident that the claims are not obvious thereover. The prior art must disclose a suggestion of the incentive for the claimed combination of elements in order for a *prima facie* case of obviousness to be established. See *In re*

Sernaker, 217 U.S.P.Q. 1 (Fed. Cir. 1983) and *Ex Parte Clapp*, 227 U.S.P.Q. 972, 973 (Bd, Pat. App. 1985). Accordingly, Applicant respectfully requests that the Section 103(a) obviousness rejections also be withdrawn.

For the foregoing reasons, reconsideration and withdrawal of the rejection of the claims at issue and allowance thereof are respectfully requested.

Respectfully submitted,

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